CLAIMS

1. A method of controlling a printer module having a printhead that prints an image on printable media, said method including the steps of:

storing an image in image storage memory;

sensing the presence of printable media in the printer module;

activating a motor to advance said printable media past said printhead in said printer module;

retrieving said image from said image storage memory;

transforming said image to a form suitable for said printhead; and

transferring said transformed image to said printhead in a synchronous manner for printing by said printhead on said printable media.

2. The method of claim 1 wherein said step of storing an image in image storage memory includes transferring an image from an image capture means to said image storage memory.

3. The method of claim 1 wherein the step of transforming said image includes transforming said image to a dithered CMY image for printing by said printhead.

4. The method of claim 3 wherein said CMY image has a resolution of 1600dpi.

5. The method of claim 1 wherein said image is stored in image storage memory in L*a*b* format and said step of transforming said image further includes the step of converting said image from L*a*b* format to CMY format.

6. The method of claim 5 wherein said step of converting said image from L*a*b* format to CMY format is a tri-linear interpolation process.

7. The method of claim 1 wherein the step of transforming said image further includes the steps of:

up-interpolating said image to a suitable resolution for printing;

dithering pixels in said image; and

formatting said image so that said image is represented by a dot function, each dot corresponding to an ink nozzle of said printhead.

8. The method of claim 1 wherein the step of dithering the image converts contone CMY to dithered bi-level CMY.

9. The method of claim 1 wherein said step of printing includes a further step of preheating and/or cleaning nozzles in said printhead.

10. A method of printing an image from image storage memory in a printer module including the steps of:

retrieving said image from said image storage memory;

transforming said image to a form suitable for a printhead; and

transferring said transformed image to said printhead in a synchronous manner for

printing by said printhead on a printable media.

5 11. The method of claim 10 wherein the step of transforming said image further

includes the steps of:

up-interpolating said image to a suitable resolution for printing;

dithering pixels in said image; and

formatting said image so that said image is represented by a dot function, each dot

10 corresponding to an ink nozzle of said printhead.

 12. A controller for a printer module having a printhead that prints an image on

printable media, said controller comprising:

a central processing unit;

program memory associated with said central processing unit, said program memory

15 storing program steps for execution by said central processing unit to operate said

printer module to print said image;

one or more interface units communicating with components of said printer module;

image storage memory storing said image; and

an image access unit in communication with said image storage memory, said central

20 processing unit and a printhead interface, said image access unit accessing said image

in said image storage memory and transferring said image to said printhead interface

on command from said central processing unit;

wherein said printhead interface transforms said image for printing by a printhead.

 13. The controller of claim 12 further comprising scratch memory associated with

25 said central processing unit for variable storage.

 14. The controller of claim 12 further comprising a serial bus interface

communicating with a Serial Bus of a compact printer system including one or more

further modules, said Serial Bus communicating power and data between said printer

module and said one or more further modules.

30 15. The controller of claim 14 wherein said data includes image data stored in said

image storage memory.

 16. The controller of claim 12 wherein said central processing unit is a micro-

controller running at about 1 Mhz.

17. The controller of claim 12 wherein at least one of said one or more interface units is a parallel interface unit communicating with at least a motor, said motor activating under control of said central processing unit to advance said printable media past said printhead.

18. The controller of claim 12 wherein said image storage memory is greater than 1 Mbytes.

19. The controller of claim 12 wherein said image storage memory is approximately 1.3 Mbytes.

20. The controller of claim 12 wherein said program memory is no greater than 8 Kbytes.

21. The controller of claim 13 wherein said scratch memory is no greater than 2 Kbytes.

22. The controller of claim 12 wherein said printhead interface includes a print generator unit that transforms said image stored in said image storage memory to a dithered CMY image for printing by said printhead.

23. The controller of claim 22 wherein said dithered CMY image has a resolution of 1600dpi.

24. The controller of claim 12 wherein said printhead interface includes a synchronization generator unit that generators synchronization signals for transferring said image from said printhead interface to said printhead.

25. The controller of claim 24 wherein said synchronization generator unit generates signals for synchronization of a motor of said printer module.

26. The controller of claim 12 wherein at least one of said one or more interface units communicates with a QA chip of an ink cartridge.

27. The controller of claim 26 wherein two of said one or more interface units communicate with a pair of QA chips, one said QA chip being said QA chip of said ink cartridge and the other said QA chip being an associated QA chip, said QA chips cooperating to authenticate said ink cartridge for said printer module.

28. The controller of claim 12 wherein said controller is an application specific integrated circuit.